EAST Search History

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	82	(("4727512") or ("5235695") or ("5297124") or ("5485321") or ("5864346") or ("5875479") or ("6067587") or ("6131148") or ("6292889") or ("6301677") or ("6496791") or ("6578120") or ("6615365") or ("6625704") or ("6654912") or ("6658435") or ("6694447") or ("6766520") or ("6834324") or ("6850964") or ("6915397") or ("7055009") or ("7096331") or ("7100089") or ("7111136") or ("7127388") or ("7155586") or ("20020004835") or ("20020095557") or ("20020199129") or ("20030126388") or ("20030135672") or ("20030149700") or ("20030225800") or ("20040098244") or ("20040181388") or ("20050076070") or ("20050144407") or ("20060047905") or ("20060143376")).PN.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/09/14 10:03
L2	3275	(primary or second$4 or master or backup or back-up or (back adj up) or mirror or redundan$3 or double) with snapshot	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/09/14 11:03
L3	191	(duplicat$3 or double) same L2	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/09/14 10:51
L4	1643	(primary or second$4 or master or backup or back-up or (back adj up) or mirror or redundan$3 or double) same mapp$3 same (data adj structure)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/09/14 10:55
L5	75	continuous adj data adj protection	US-PGPUB; USPAT; USOCR	OR	ON	2007/09/14 10:55
L6	22768	sequential adj order	US-PGPUB; USPAT; USOCR	OR	ON	2007/09/14 10:55

EAST Search History

L7	12	L6 and L5	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/09/14 10:55
L8	2	7 and 4	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/09/14 10:57
L9	69	4 and 6	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/09/14 10:57
L11	148181	(a adj point adj in adj time) or PIT or APIT or (point adj in adj time)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/09/14 10:58
L12	2	9 and L11	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/09/14 10:59
L13	1660	two adj point adj2 time	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/09/14 10:59
L14	3	13 and 9	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/09/14 11:00
L15	6146	(714/2,42,6,7,8,13,11,12).ccls.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/09/14 11:05

EAST Search History

L16	6	(mapp$3 or mirror or redundan$3 or double) same (primary or second$4 or first or backup or back-up) same volumn	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2007/09/14 11:07
L17	2959	(mapp$3 or mirror or redundan$3 or double) same (primary or second$4 or first or backup or back-up) same (data adj structure)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2007/09/14 11:09
L18	0	17 and 6 and 1	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/09/14 11:09
L19	3	17 and 6 and 15	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/09/14 11:09
S1	10970	recover$4 near4 continuous$4	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/01/03 11:07
S2	919	(714/2).ccls.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/05/23 23:13
S3	501	(714/13).ccls.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/05/10 22:36
S5	2394	(primary or second$4 or master or backup or back-up or (back adj up) or mirror or redundan$3 or double) with snapshot	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/07/06 15:36

S6	138486	(a adj point adj in adj time) or PIT or APIT or (point adj in adj time)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/07/05 06:54
S7	1	S1 same S5 same S6	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/07/05 06:54
S8	4	S1 and S5 and S6	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/07/05 07:24
S9	54	S5 and S6	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/07/05 07:24
S10	20	S9 and recover$4 and continuous$4	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/07/05 07:25
S11	1	"5673382".PN.	USPAT; USOCR	OR	ON	2006/07/05 11:32
S12	1	"6148412".PN.	USPAT; USOCR	OR	ON	2006/07/05 11:35
S13	1	"6166784".PN.	USPAT; USOCR	OR	ON	2006/07/05 11:36
S14	1	"6266784".PN.	USPAT; USOCR	OR	ON	2006/07/05 11:37
S15	1	"6166784".PN.	USPAT; USOCR	OR	ON	2006/07/05 11:47
S16	1	"6393516".PN.	USPAT; USOCR	OR	ON	2006/07/05 11:47
S17	1	"6266784".PN.	USPAT; USOCR	OR	ON	2006/07/05 11:47
S18	1	"6266784".PN.	USPAT; USOCR	OR	ON	2006/07/05 11:47
S19	1	"6393516".PN.	USPAT; USOCR	OR	ON	2006/07/05 11:47

S20	1	"20040088382".PN.	US-PGPUB	OR	ON	2006/07/05 11:47
S21	1	"20040123029".PN.	US-PGPUB	OR	ON	2006/07/05 11:56
S22	1	"20050010529".PN.	US-PGPUB	OR	ON	2006/07/05 12:01
S23	181	(stager-roger$ or trimmer-donald$ or saxena-pawan$ or johnson-randall$ or johnston-craig$ or chang-yafen$ or blaser-rico$).in.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/07/05 12:12
S24	919	(714/2).ccls.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/07/05 12:42
S25	2394	(primary or second$4 or master or backup or back-up or (back adj up) or mirror or redundan$3 or double) with snapshot	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/09/14 10:52
S26	138486	(a adj point adj in adj time) or PIT or APIT or (point adj in adj time)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/07/05 12:42
S27	54	S25 and S26	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/07/05 12:42
S28	2	S27 and S24	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/07/05 12:43
S29	20	S27 and recover$4 and continuous$4	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/07/05 12:44

EAST Search History

S30	31	S27 not (S23 or S29)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/07/05 12:44
S31	36	S27 and map$4	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/07/05 13:09
S32	21	S31 and recover$4	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/07/05 13:09
S33	0	S32 not (S29 or S30)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/07/05 14:35
S34	590	(duplicat$3 or double) adj write	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/09/14 10:51
S35	6	(mapp$3 or mirror or redundan$3 or double) same (primary or second$4 or first or backup or back-up) same volumn	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/09/14 11:07
S36	368	S34 same (mapp$3 or mirror or redundan$3 or double)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/07/06 15:38
S37	2	S36 same rewound$4	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/07/06 15:39

S38	2402	(primary or second$4 or master or backup or back-up or (back adj up) or mirror or redundan$3 or double) with snapshot	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/07/06 15:39
S39	138555	(a adj point adj in adj time) or PIT or APIT or (point adj in adj time)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/07/06 15:39
S40	6	S36 and S38 and S39	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/07/06 15:41
S41	687	(714/42).ccls.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/05/11 06:29
S42	941	(714/5).ccls.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/07/06 15:42
S43	429	(714/8).ccls.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/07/06 15:43
S44	110	delta adj map$4	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/07/06 15:44
S45	6	S44 and S38 and S39	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/07/07 09:08

S46	2	("20050010529").PN.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2006/07/07 09:08
S47	171	("20020016827"|"20020026595"|"20020144057"|"20020166079"|"20030004980"|"20030037211"|"20030120676"|"20030188208"|"20040015731"|"20040181707"|"20050010529"|"20050063374"|"20050065962"|"20050066118"|"20050066222"|"20050066225"|"20050076261"|"20050076262"|"20050076264"|"20060047895"|"20060047902"|"20060047903"|"20060047925"|"20060047989"|"20060047998"|"20060047999"|"4635145"|"4775969"|"5438674"|"5455926"|"5666538"|"5673382"|"5774292"|"5774715"|"5805864"|"5809511"|"5809543"|"5854720"|"5872669"|"5911779"|"5949970"|"5961613"|"5963971"|"6021408"|"6023709"|"6029179"|"6041329"|"6044442"|"6049848"|"6061309"|"6070224"|"6098148"|"6128698"|"6131142"|"6163856"|"6173359"|"6195730"|"6225709"|"6247096"|"6260110"|"6266784"|"6269423"|"6269431"|"6282609"|"6289425"|"6304880"|"6317814"|"6324497"|"6327418"|"6336163"|"6336173"|"6339778"|"6341329"|"6343342"|"6353837"|"6360232"|"6389503"|"6408359"|"6487561"|"6499026"|"6557089"|"6725331"|"6779057"|"6779058"|"6779081"|"6816941"|"6816942"|"6931557"|"6950263"|"7032126").PN.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/01/03 10:52
S48	9435	(mapp$3 or mirror or redundan$3 or double) same (data adj structure)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/01/03 10:54
S49	142542	(a adj point adj in adj time) or PIT or APIT or (point adj in adj time)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/01/03 10:56

S50	4	(rewound or rewind$3) near3 (S49 or (any adj point adj in adj time) or "any point in time")	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/01/03 10:59
S51	3	S48 same S49	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/01/03 11:00
S52	4221	(duplicat$3 or double) near2 writ$3	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/01/03 11:13
S53	10222	continuous$4 near3 protect$3	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/01/03 11:07
S54	111	S48 and S49	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/01/03 11:07
S55	7	S54 and S52	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/01/03 11:08
S56	2	S54 and S53	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/01/03 11:09
S57	0	S54 and S47	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/01/03 11:09

EAST Search History

S58	6691	(duplicat$3 or replicat$3 or mirror$3 or double) near2 writ$3	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/05/23 23:14
S59	743	(714/42).ccls.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/01/03 11:24
S60	982	(714/15).ccls.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/01/03 11:27
S61	2749	(707/200).ccls.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/05/10 22:38
S62	1112	(707/202).ccls.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/01/03 11:25
S63	1791	(707/204).ccls.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/01/03 11:25
S64	2	S54 and (S59 or S60)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/01/03 11:33
S65	691	(714/7).ccls.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/01/03 11:27

S66	551	(714/13).ccls.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/01/03 11:27
S67	982	(714/15).ccls.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/01/03 11:27
S68	1	S54 and (S65 or S66 or S67)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/01/03 11:35
S69	3	S54 and (S61 or S62 or S63)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/01/03 11:57
S70	2	("6785848").PN.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/01/03 13:13
S71	3644	recover$3 same continuous$4 same protect$3	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/05/10 22:29
S72	145585	(a adj point adj in adj time) or PIT or APIT or (point adj in adj time)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/05/10 22:38
S73	145585	S72	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/05/10 22:31

EAST Search History

S74	2972	(primary or second$4 or master or backup or back-up or (back adj up) or mirror or redundan$3 or double) with snapshot	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/05/10 22:35
S75	2972	S74	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/05/10 22:31
S76	30	S71 same S72	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/05/10 22:31
S77	4	S76 same S74 same snapshot	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/05/10 22:32
S78	0	(earlier adj point adj in adj time) same S76 same S74	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/05/10 22:36
S79	0	(earlier adj point adj in adj time) and S76 and S74	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/05/10 22:36
S80	576	(714/13).ccls.	US-PGPUB; USPAT; USOCR	OR	ON	2007/05/10 22:37
S81	707	(714/11).ccls.	US-PGPUB; USPAT; USOCR	OR	ON	2007/05/10 22:37
S82	654	(714/2).ccls.	US-PGPUB; USPAT; USOCR	OR	ON	2007/05/10 22:37
S83	1044	(714/5).ccls.	US-PGPUB; USPAT; USOCR	OR	ON	2007/05/10 22:37

EAST Search History

S84	479	(714/8).ccls.	US-PGPUB; USPAT; USOCR	OR	ON	2007/05/10 22:37
S85	1169	(707/202).ccls.	US-PGPUB; USPAT; USOCR	OR	ON	2007/05/10 22:38
S86	4	previous adj point adj in adj time	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/05/10 22:39
S87	780	(714/42).ccls.	US-PGPUB; USPAT	OR	ON	2007/05/11 06:29
S88	572	(714/13).ccls.	US-PGPUB; USPAT	OR	ON	2007/05/11 06:29
S89	646	(714/2).ccls.	US-PGPUB; USPAT	OR	ON	2007/05/11 06:30
S90	780	(714/42).ccls.	US-PGPUB; USPAT	OR	ON	2007/05/11 06:30
S91	0	(714/58).ccls.	US-PGPUB; USPAT	OR	ON	2007/05/11 06:30
S92	1039	(714/5).ccls.	US-PGPUB; USPAT	OR	ON	2007/05/11 06:30
S93	476	(714/8).ccls.	US-PGPUB; USPAT	OR	ON	2007/05/11 06:30
S94	2954	(707/200).ccls.	US-PGPUB; USPAT	OR	ON	2007/05/11 06:31
S95	1168	(707/202).ccls.	US-PGPUB; USPAT	OR	ON	2007/05/11 06:31
S96	1937	(707/204).ccls.	US-PGPUB; USPAT	OR	ON	2007/05/11 06:32
S97	3644	recover$3 same continuous$4 same protect$3	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/05/11 06:32
S98	870	S97	US-PGPUB; USPAT	OR	ON	2007/05/11 06:32
S99	145585	(a adj point adj in adj time) or PIT or APIT or (point adj in adj time)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/05/11 06:32

EAST Search History

S100	59962	S99	US-PGPUB; USPAT	OR	ON	2007/05/11 06:32
S101	4	previous adj point adj in adj time	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/05/11 06:33
S102	4	S101	US-PGPUB; USPAT	OR	ON	2007/05/11 06:33
S103	2972	(primary or second$4 or master or backup or back-up or (back adj up) or mirror or redundan$3 or double) with snapshot	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/05/11 06:33
S104	2727	S103	US-PGPUB; USPAT	OR	ON	2007/05/11 06:34
S105	8	S97 and S99 and S103	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/05/11 06:35
S106	0	S97 and S99 and S101 and S87	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/05/11 06:35
S107	0	S97 and S99 and S101 and S88	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/05/11 06:35
S108	0	S97 and S99 and S101 and S89	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/05/11 06:35
S109	0	S97 and S99 and S101 and S91	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/05/11 06:35

S11 0	0	S97 and S99 and S103 and S92	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/05/11 06:35
S11 1	0	S97 and S99 and S103 and S93	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/05/11 06:35
S11 2	1	S97 and S99 and S103 and S94	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/05/11 06:35
S11 3	0	S97 and S99 and S103 and S95	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/05/11 06:36
S11 4	0	S97 and S99 and S103 and S96	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/05/11 06:36
S11 5	2	S97 and S99 and S103 and ("714"/$).ccls.	US-PGPUB; USPAT; USOCR	OR	ON	2007/05/11 06:36
S11 6	2	S97 and S99 and S103 and ("707"/$).ccls.	US-PGPUB; USPAT; USOCR	OR	ON	2007/05/11 06:36
S11 7	789	(714/42).ccls.	US-PGPUB; USPAT; USOCR	OR	ON	2007/05/23 23:13
S11 8	270	(714/52).ccls.	US-PGPUB; USPAT; USOCR	OR	ON	2007/05/23 23:13
S11 9	577	(714/13).ccls.	US-PGPUB; USPAT; USOCR	OR	ON	2007/05/23 23:13
S12 0	749	(714/15).ccls.	US-PGPUB; USPAT; USOCR	OR	ON	2007/05/23 23:13

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S12 1	657	(714/2).ccls.	US-PGPUB; USPAT; USOCR	OR	ON	2007/05/23 23:13
S12 2	1047	(714/5).ccls.	US-PGPUB; USPAT; USOCR	OR	ON	2007/05/23 23:13
S12 3	481	(714/8).ccls.	US-PGPUB; USPAT; USOCR	OR	ON	2007/05/23 23:13
S12 4	2988	(707/200).ccls.	US-PGPUB; USPAT; USOCR	OR	ON	2007/05/23 23:14
S12 5	1962	(707/204).ccls.	US-PGPUB; USPAT; USOCR	OR	ON	2007/05/23 23:14
S12 6	1179	(707/202).ccls.	US-PGPUB; USPAT; USOCR	OR	ON	2007/05/23 23:14
S12 7	2783	(primary or second$4 or master or backup or back-up or (back adj up) or mirror or redundan$3 or double) with snapshot	US-PGPUB; USPAT; USOCR	OR	ON	2007/05/23 23:14
S12 8	5778	(duplicat$3 or replicat$3 or mirror$3 or double) near2 writ$3	US-PGPUB; USPAT; USOCR	OR	ON	2007/05/23 23:15
S12 9	50	continuous adj data adj protection	US-PGPUB; USPAT; USOCR	OR	ON	2007/05/23 23:15
S13 0	403	mapp$3 adj data adj structure	US-PGPUB; USPAT; USOCR	OR	ON	2007/05/23 23:16
S13 1	21917	sequential adj order	US-PGPUB; USPAT; USOCR	OR	ON	2007/05/23 23:17
S13 2	2	any adj point adj in adj time	US-PGPUB; USPAT; USOCR	OR	ON	2007/05/23 23:18
S13 3	9	S127 and S128 and S129	US-PGPUB; USPAT; USOCR	OR	ON	2007/05/23 23:18
S13 4	2	S133 and S130 and S131	US-PGPUB; USPAT; USOCR	OR	ON	2007/05/23 23:18
S13 5	0	S134 and S132 and S117	US-PGPUB; USPAT; USOCR	OR	ON	2007/05/23 23:19

S13 6	11	S127 and S128 and S126 and (S118 or S119 or S120 or S121 or S122 or S123 or S124 or S125 or S126)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/05/23 23:20

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Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	2574	recover$4 same continuous same protect$4	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/09/16 13:51
L2	861	snapshot same (primary or second$4 or master or slave or backup or back-up or "back up" or mirror or redundan$2 or double) same volume	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/09/16 14:17
L3	942	("point in time" or "earlier point in time" or PIT) same map$4	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/09/16 14:19
L4	948	(" previous point in time" or APIT or "point in time" or "earlier point in time" or PIT) same map$4	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/09/16 14:21
L5	1015	(714/2).ccls.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/09/16 14:22
L6	731	(714/11).ccls.	US-PGPUB; USPAT; USOCR	OR	ON	2007/09/16 14:25
L7	337	(714/12).ccls.	US-PGPUB; USPAT; USOCR	OR	ON	2007/09/16 14:25
L8	610	(714/13).ccls.	US-PGPUB; USPAT; USOCR	OR	ON	2007/09/16 14:25
L9	1083	(714/5).ccls.	US-PGPUB; USPAT; USOCR	OR	ON	2007/09/16 14:26
L10	498	(714/8).ccls.	US-PGPUB; USPAT; USOCR	OR	ON	2007/09/16 14:26

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#3	((snapshot<in>metadata) <and> (apit<in>metadata))<and> (recovery<in>metadata)	0
#4	((pit mapping<in>metadata) <and> (primary volume<in>metadata))<and> (recovery<in>metadata)	0
#5	((continuous data protection<in>metadata) <and> (snapshot<in>metadata))<and> (pit map<in>metadata)	0

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1   The relational model for database management: version 2   ■
E. F. Codd
January 1990 Book
Publisher: Addison-Wesley Longman Publishing Co., Inc.
Full text available: 🔲 pdf(28.61 MB)   Additional Information: full citation, abstract, references, cited by, index terms, review

> **From the Preface (See Front Matter for full Preface)**
>
> An important adjunct to precision is a sound theoretical foundation. The relational model is solidly based on two parts of mathematics: firstorder predicate logic and the theory of relations. This book, however, does not dwell on the theoretical foundations, but rather on all the features of the relational model that I now perceive as important for database users, and therefore for DBMS vendors. My perceptions result from 20 y ...

2   The multics system: an examination of its structure   ■
Elliott I. Organick
January 1972 Book
Publisher: MIT Press
Additional Information: full citation, abstract, references, cited by, index terms

> This volume provides an overview of the Multics system developed at M.I.T.--a time-shared, general purpose utility like system with third-generation software. The advantage that this new system has over its predecessors lies in its expanded capacity to manipulate and file information on several levels and to police and control access to data in its various files. On the invitation of M.I.T.'s Project MAC, Elliott Organick developed over a period of years an explanation of the workings, concep ...

3   Fast detection of communication patterns in distributed executions   ■
Thomas Kunz, Michiel F. H. Seuren
November 1997 **Proceedings of the 1997 conference of the Centre for Advanced Studies on Collaborative research CASCON '97**
Publisher: IBM Press
Full text available: 🔲 pdf(4.21 MB)   Additional Information: full citation, abstract, references, index terms

> Understanding distributed applications is a tedious and difficult task. Visualizations based on process-time diagrams are often used to obtain a better understanding of the execution of the application. The visualization tool we use is Poet, an event tracer developed at the University of Waterloo. However, these diagrams are often very complex and do not provide the user with the desired overview of the

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81 Improving the reliability of commodity operating systems
Michael M. Swift, Brian N. Bershad, Henry M. Levy
February 2005 **ACM Transactions on Computer Systems (TOCS)**, Volume 23 Issue 1
Publisher: ACM Press
Full text available: 📄 pdf(459.98 KB)   Additional Information: full citation, abstract, references, citings, index terms

   Despite decades of research in extensible operating system technology, extensions such as device
   drivers remain a significant cause of system failures. In Windows XP, for example, drivers account for
   85&percent; of recently reported failures.This article describes Nooks, a *reliability subsystem* that seeks
   to greatly enhance operating system (OS) reliability by isolating the OS from driver failures. The Nooks
   approach is practical: rather than guaranteeing complete fault tolerance through ...

   Keywords: I/O, Recovery, device drivers, protection, virtual memory

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82 The theory of parsing, translation, and compiling
Alfred V. Aho, Jeffrey D. Ullman
January 1972 Book
Publisher: Prentice-Hall, Inc.
Full text available: 📄 pdf(98.28 MB)   Additional Information: full citation, abstract, references, cited by, index terms

   From volume 1 Preface (See Front Matter for full Preface)

   This book is intended for a one or two semester course in compiling theory at the senior or graduate
   level. It is a theoretically oriented treatment of a practical subject. Our motivation for making it so is
   threefold.

   (1) In an area as rapidly changing as Computer Science, sound pedagogy demands that courses
   emphasize ideas, rather than implementation details. It is our hope that the algorithms and concepts
   presen ...

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83 Redundancy: The case for semantic aware remote replication
Xiaotao Liu, Gal Niv, Prashant Shenoy, K.K. Ramakrishnan, Jacobus Van der Merwe
October 2006 **Proceedings of the second ACM workshop on Storage security and survivability
        StorageSS '06**
Publisher: ACM Press

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Improving Recoverability in Multi-tier Storage Systems

Aguilera, Marcos K.   Keeton, Kimberly   Merchant, Arif   Muniswamy-Reddy, Kiran-Kumar   Uysal, Mustafa
HP Labs, USA

Abstract
Enterprise storage systems typically containmultiple storage tiers, each having its own performance, reliability, and recoverability. The primary motivation for this multi-tier organization is cost, as storage tier costs vary considerably. In this paper, we describe a file system called TierFS that stores files at multiple storage tiers while providing high recoverability at all tiers. To achieve this goal, TierFS uses several novel techniques that leverage coupling between multiple tiers to reduce data loss, take consistent snapshots across tiers, provide **continuous data protection**, and improve **recovery** time. We evaluate TierFS with analytical models, showing that TierFS can provide better recoverability than a conventional design of similar cost.

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References

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TRAP-Array: A Disk Array Architecture Providing Timely Recovery to Any Point-in-time

Qing Yang   Weijun Xiao   Jin Ren
Dept. of Electr. & Comput. Eng., Rhode Island Univ., Kingston, RI

Abstract
RAID architectures have been used for more than two decades to recover data upon disk failures. Disk failure is just one of the many causes of damaged data. Data can be damaged by virus attacks, user errors, defective software/firmware, hardware faults, and site failures. The risk of these types of data damage is far greater than disk failure with today's mature disk technology and networked information services. It has therefore become increasingly important for today's disk array to be able to recover data to any point in time when such a failure occurs. This paper presents a new disk array architecture that provides timely **recovery** to any point-in-time, referred to as TRAP-array. TRAP-array stores not only the data stripe upon a write to the array, but also the time-stamped exclusive-ORs of successive writes to each data block. By leveraging the exclusive-OR operations that are performed upon each block write in today's RAID4/5 controllers, TRAP does not incur noticeable performance overhead. More importantly, TRAP is able to recover data very quickly to any point-in-time upon data damage by tracing back the sequence and history of exclusive-ORs resulting from writes. What is interesting is that TRAP architecture is amazingly space-efficient. We have implemented a prototype TRAP architecture using software at block device level and carried out extensive performance measurements using TPC-C benchmark running on Oracle and Postgress databases, TPC-W running on MySQL database, and file system benchmarks running on Linux and Windows systems. Our experiments demonstrated that TRAP is not only able to recover data to any point-in-time very quickly upon a failure but it also uses less storage space than traditional daily differential backup/snapshot. Compared to the state-of-the-art **continuous data protection** technologies, TRAP saves disk storage space by one to two orders of magnitude with a simple and a fast encoding algorithm. From an architecture point of view, T- RAP-array opens up another dimension for storage arrays. It is orthogonal and complementary to RAID in the sense that RAID protects data in the dimension along an array of physical disks while TRAP protects data in the dimension along the time sequence

Index Terms
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    Controlled Indexing
    RAID   back-up procedures   security of data   system **recovery**

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